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Herbicide Guide

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1981

FOR COMMERCIAL VEGETABLE GROWERS

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Restricted-use herbicides are identified with an asterisk ().*

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You must be certified as a pesticide applicator to use restricted-use pesticides.

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See your county Extension adviser in agriculture for information.

WEED GROWTH reduces the income of vegetable growers in the United States by millions of dollars annually as a result of lower yields, poorer quality, and added labor in harvesting and processing.

This guide should be used together with the grower's knowledge of soil types and the crop and weed history of the area to be treated. Whether to use herbicides or other means of weed control depends in part on the severity of past weed infestations. In many instances mechanical control is sufficient, or it may be needed in addition to herbicide use. Several herbicides may be suggested for some crops. These herbicides have shown good control with no injury to the vegetables under test conditions. Not all herbicides cleared for use on a species are necessarily listed. Where the choice of more than one herbicide is suggested, the decision rests with the grower and is based on his knowledge of past weed infestations, crop rotations, and material costs. Where one herbicide will not control the weeds present, a combination of herbicides may be suggested. When using a herbicide for the first time, it is advisable to use a small-scale trial.

These suggestions for chemical weed control in vegetables are based on research at the Illinois Agricultural Experiment Station, the U.S. Department of Agriculture, and other research institutions. The University of Illinois and its agents assume no responsibility for results from the use of these herbicides, whether or not they were used in accordance with suggestions, recommendations, or directions of the manufacturer or any governmental agency.

Reading the label of the herbicide container is the most profitable time you spend in weed control. Use of the material and methods of application and use depend on registration of the herbicide by federal and state Environmental Protection Agencies (EPA). Do not use any herbicide unless the label states that it is cleared for the use on the crop to be treated.

Herbicides are being classified for *general use* or *restricted use* by the U.S. Environmental Protection Agency. A person wishing to use a herbicide classified for restricted use must be certified as a private or commercial pesticide applicator by the Illinois Department of Agriculture. Contact your county Extension adviser in agriculture for details about this program.

Only a few herbicides have been classified at this time. More will be classified later.

When applying mixtures of chemicals, the *user* assumes responsibility for freedom from residues if the mixture is not labeled by the EPA.

Suggestions sometimes change during the growing season, based on EPA clearances that were made after this circular was issued. This publication, printed once a year, is subject to change without notification.

Watch for notice of changes in the EPA registration of herbicides (as released by the EPA) in the *Illinois Vegetable Farmer's Letter* and the *Insect, Weed, and Plant Disease Survey Bulletin*. Subscription forms for these University of Illinois newsletters are available from the Agricultural Newsletter Service, 116 Mumford Hall, Urbana, Illinois 61801, or your county Cooperative Extension Office.

NOTE: In the suggestions on the following pages, trade names of herbicides are usually used. The list below shows trade names and their corresponding common names. Restricted-use herbicides are identified with an asterisk(*).

Common name	Trade name	Common name	Trade name	Common name	Trade name
alachlor.....	Lasso	dalapon.....	Basfapon, Dowpon	naptalam.....	Alanap
atrazine.....	AAtrex and others	DCPA.....	Dacthal	nitrofen*.....	TOK*
benefin.....	Balan	dinitramine.....	Cobex	paraquat*.....	Paraquat*
bensulide.....	Prefar	dinoseb.....	Premerge-3, Sinox	phenmedipham.....	Betanal
bentazon.....	Basagran	diphenamid.....	Dymid, Enide	profluralin.....	Tolban
butylate.....	Sutan+	diuron.....	Karmex	pronamide*.....	Kerb*
CDA.....	Randox	EPTC.....	Eptam, Eradicane	propachlor.....	Bexton, Ramrod
chloramben.....	Amiben, Vegiben 2E	glyphosate.....	Roundup	pyrazon.....	Pyramin
chlorbromuron.....	Maloran	linuron.....	Lorox	simazine.....	Princep
chlorpropham.....	Furloe	MCPA, MCPB.....	(numerous ones)	trifluralin.....	Treflan
cyanazine.....	Bladex	metribuzin.....	Lexone, Sencor	Petroleum solvent.....	Stoddard Solvent
cycloate.....	Ro-Neet	napropamide.....	Devrinol	2,4-D (amine).....	(numerous ones)

SUGGESTIONS FOR 1981 ONLY

<i>Crop</i>	<i>Treatment</i>	<i>Active ingredient per acre actually covered¹</i>	<i>Weeds controlled</i>	<i>Timing of application (based on crop stage)</i>	<i>Remarks, cautions, limitations</i>
Asparagus (seedlings)	Amiben	3 lb.	Annuals	Immediately after seeding	Irrigation or rainfall after treatment will give maximum control.
Asparagus (established plantings)	dalapon	5-10 lb.	Perennial grass	End of harvest season following disking	Apply when grass weeds are 3 to 4 inches tall. Direct spray under fern growth. Use surfactant as directed on label.
	Karmex	1-4 lb.	Annuals	In spring and/or after harvest	Apply after disking. Do not exceed 6 pounds per growing season. Use a lighter rate on sandy soil. With Karmex and Princep, a spring application may be sufficient after the first year.
	Princep	3-4 lb.	Annuals	In spring and/or after harvest	Apply after disking. Do not treat during the last year in asparagus because of residue.
	metribuzin	1-2 lb.	Primarily broad- leaf weeds	Early spring before the spears emerge	Apply after disking. Do not apply within 14 days of harvest. Can help control broadleaf weeds when used with dalapon, Karmex, or Princep.
Perennial weed control, applications during and outside the growing season (see page 5) Stale seedbed, before crop emergence (see page 5)					
Beans, dry, lima, and snap	Preemergence				
	Treflan	0.5-0.75 lb.	Annuals ² (primarily grasses)	Preplant soil application, incor- porate with soil immediately	Plant crop immediately, or within 3 weeks after application. Can be used up to 1 pound per acre on dry beans.
	Tolban	0.5-1 lb.	Primarily annual grasses	Preplant soil incorporation	
	Premerge-3	6-7.5 lb.	Annuals	Can be used between planting and crop emergence	Do not use on light, sandy soil. Some stand reduction may result from use. See label for precautions.
	Postemergence				
	Basagran	0.75-1 lb.	Annual broad- leaf weeds, Canada thistle, nutsedge	When weeds are small and are actively growing; after the first trifoliate leaf appears on beans	Can provide good, broad-spectrum control when combined with a grass-active herbicide. Do not mix with other pesticides. See Basagran entry under corn, postemergence for Canada thistle and nutgrass control.
Perennial grass control, applications outside the growing season (see page 6)					
Beans, lima and dry	Amiben	2-3 lb.	Broad spectrum of annual weeds	Immediately after seeding, or preplant-incorporated for lima beans	Field may be rotary-hoed without destroying herbicide action.
Beans, snap	Eptam	3 lb.	Annual grasses and nutgrass ³	Preplant soil application, incor- porate with soil immediately	
	Dacthal	6-10 lb.	Annuals ⁴ (primarily grasses)	Immediately after seeding	Do not feed treated plant parts to livestock.
	Vegiben 2E (2E form only)	1.5-3 lb.	Broad spectrum of annual weeds	Immediately after seeding	Use on loam soil.
Beans, dry	Cobex	0.3-0.6 lb.	Annuals	Preplant soil incorporation	
Beets, garden	Pyramin	4 lb.	Annuals (primarily broadleaved)	Preemergence or after beets emerge and before weeds have two true leaves	Rainfall or irrigation needed to activate. Where grasses are a severe problem, use 4 pounds of Pyramin plus 4 pounds of Ro-Neet.
	Ro-Neet	4 lb.	Annual grasses	Preplant soil application, incor- porate with soil immediately	Use a combination treatment with Pyramin to broaden control spectrum.
	Betanal	1-1.5 lb.	Broad spectrum of annual weeds. Not effective on pig- weeds	After the beets are past the 2-true-leaf stage	Beets in the cotyledonary stage may be severely injured. For best results, spray when the weeds are between the cotyledonary and 2-true-leaf stage. Best results will be obtained when the weeds are actively growing and are not under water or heat stress. Do not apply later than 50 days before harvest. May injure beets under heat, water, or other environmental stress.
Broccoli Brussels sprouts Cabbage Cauliflower	Preemergence — direct-seeded or transplanted				
	Treflan	0.5-0.75 lb.	Annuals ² (primarily grasses)	Preplant soil application, incor- porate with soil immediately	Stunting or growth reduction may occur at recommended rates under growth stress conditions. Can be used up to 1 pound per acre on transplants.
	Dacthal	6-10 lb.	Annuals ⁴ (primarily grasses)	Immediately after seeding. Can also be incorporated preplant	
	Postemergence — direct-seeded or transplanted				
	TOK ⁵ *	3-6 lb.	Broadleaved weeds ⁶	One to two weeks after emer- gence or transplanting, while weeds are in seedling stage	Use wettable-powder formulation to reduce injury poten- tial. Use in combination with preplant or preemergence material for annual grass control.
TOK may not be available for the 1981 season because of possible label cancellation. Watch the University of Illinois vegetable and pest control newsletters (see page 1) for news concerning the status of TOK.					
Carrots	Preemergence				
	Treflan	0.5-1 lb.	Annuals ² (primarily grasses)	Preplant soil application, incor- porate with soil immediately	Seed after application to 3 weeks later.
	Postemergence				
	Lorox	0.75-1.5 lb.	Annuals	Postemergence on carrots only after the crop is 3 inches tall; grasses, less than 2 inches; broadleaves, less than 6 inches	Do not feed treated foliage to livestock or replant treated area for 4 months. More than one application may be made, but do not exceed a total of 2 pounds per acre. Do not use over 40 PSI. Use no surfactants when temperatures exceed 80°F., or crop injury may result.
	TOK ⁵ *	3-6 lb.	Broadleaved weeds ⁶	While weeds are in the seedling stage	Can also be used on celery and parsley. Combine with pre- plant or preemergence material for annual grass control.
TOK may not be available for the 1981 season because of possible label cancellation. Watch the University of Illinois vegetable and pest control newsletters (see page 1) for news concerning the status of TOK.					

Continued on the next page.

(See footnotes on page 6.)

SUGGESTIONS FOR 1981 ONLY

<i>Crop</i>	<i>Treatment</i>	<i>Active ingredient per acre actually covered¹</i>	<i>Weeds controlled</i>	<i>Timing of application (based on crop stage)</i>	<i>Remarks, cautions, limitations</i>
Carrots (cont.)	Stoddard Solvent	60-80 gal.	Annuals	After two true leaves have appeared (do not apply to carrots or parsnips after they are 1/4 inch in diameter, since an oily taste may result)	Most effective when sprayed on cloudy days or during high humidity, and when weeds are not more than 2 inches high. May not control ragweed. Do not apply within 40 days of harvest. Can be used on celery, dill, parsnips, and parsley.
Corn, pop	Preemergence atrazine	2-3 lb.	(See sweet corn)	(See sweet corn)	See sweet corn, <i>except the section on preemergence combinations</i> . Some pop corn varieties are sensitive to the application rate. (See remarks on Bladex under sweet corn.)
	Bladex	(See remarks)	Annuals	Preemergence only	
	Eradicane	4-6 lb.	Difficult-to-control weeds	Preplant soil application, incorporate with soil	See sweet corn.
	Lasso	2-2.5 lb.	Annuals	Preemergence	See sweet corn.
	Princep	2-3 lb.	Annuals	Preemergence	Plant only crops so specified on the label the following year. Do not graze treated areas.
	Sutan +	3-4 lb.	Primarily annual grasses	Preplant soil application, incorporate with soil	See sweet corn.
	Postemergence 2,4-D	0.5 lb.	Broadleaved weeds	Postemergence	Apply when corn is 3 to 10 inches tall.
	Perennial grass control, applications outside the growing season (see page 6)				
Corn, sweet	Preemergence atrazine	2-3 lb.	Annuals, annual and perennial grasses ⁷	Preemergence, apply no later than 3 weeks after seeding. Shallow cultivation may improve weed control during dry weather.	Grow corn a second year without atrazine treatment. This chemical has a high soil residue. Do not plant other vegetable crops on a sprayed area until a second year of corn has been grown. Use atrazine where quackgrass is a problem. Residue hazard decreased when banded or in combination with Lasso, propachlor, or Sutan.
	Bladex	(See remarks)	Annuals	Preemergence only	
	Eradicane	4-6 lb.	Difficult-to-control weeds	Preplant soil application, incorporate with soil	Some sweet corn varieties are sensitive to the application rate. Has been shown to have less soil residual than atrazine. See label for rates and precautions. Do not use postemergence, or on sandy or loamy-sandy soils (under 1 percent organic matter). Can be combined with other herbicides to reduce the rate being used. NOTE: The Shell Chemical Co. has a bulletin on using Bladex on pop and sweet corn.
	Lasso	2-2.5 lb.	Annuals	Preemergence	Use to control weeds that are difficult to control with other herbicides, such as wild cane, nutsedge, quackgrass, wild Proso millet, and seedling Johnsongrass.
	propachlor	4-5 lb.	Annuals	Preemergence	Preplant incorporation may aid control of nutgrass.
	Sutan +	3-4 lb.	Primarily annual grasses	Preplant soil application, incorporate with soil	Do not use on sandy soils. Is an excellent herbicide on soils with a high organic-matter content.
	Preemergence combinations				Especially useful on sandy soil and where nutgrass is a problem.
	atrazine	1.5 lb.	Annuals and perennial grasses	Preemergence or preplant incorporated	See label for slightly higher rate of Lasso for preplant incorporation.
	plus Lasso	+2 lb.	Annuals and perennial grasses	Preemergence	Use to reduce atrazine residue.
	atrazine plus propachlor	+3 lb.	Annuals and perennial grasses	Preplant soil incorporation, incorporate with soil immediately	Use where nutgrass is a problem and to reduce atrazine residue.
	atrazine plus Sutan +	+3-4 lb.	Annuals and perennial grasses		
	Postemergence 2,4-D (amine)	0.5 lb.	Broadleaved weeds	Postemergence	Preferably, apply before corn is 6 inches tall. If corn is over 12 inches, reduce the rate to 1/4 pound.
	atrazine	2 lb.	Annuals, annual and perennial grasses ⁷	Directed spray 3 weeks after emergence	Can be combined with crop oils for postemergence application as an emergency measure. This may increase residue the following year. Preemergence use preferred. Do not graze or feed treated foliage for 21 days after treatment.
	Basagran	0.75-1 lb.	Broadleaved annual weeds, Canada thistle, and nutsedge	Early postemergence when the weeds are small and actively growing. Delay will result in less control.	For Canada thistle and nutsedge, split applications are preferred. Make the first one when the plants are 6 to 8 inches tall; for nutsedge, 7 to 10 days later; for Canada thistle, 10 to 14 days later (or use one application plus cultivation). Do not mix with other pesticides.
Perennial grass control, applications outside the growing season (see page 6)					
Cucumbers	Alanap ⁸	3-5 lb.	Annuals ⁸	Immediately after seeding or transplanting	Do not use on cold soil. Rainfall or irrigation after treatment gives maximum control.
Muskmelons		3-3.5 lb.		After transplanting or vining	Use the granular form. Keep away from foliage. Apply to soil after the weeds have been removed.
Watermelons	Prefar	4-6 lb.	Annuals (primarily grasses)	Preplant soil application, incorporate with soil immediately	Is primarily a grasskiller. Consult label for sensitive crops within 18 months after application. Prefar can be used in rotation with tomatoes, broccoli, cauliflower, lettuce, carrots, onions, and summer squash within 18 months.
	Prefar plus Alanap ⁸	4 lb. +2-3 lb.	Grasses and broadleaved weeds	Preplant soil incorporation for Prefar; Alanap, as an immediate postseeding application	Has value for broad-spectrum weed control. Consult label for sensitive crops within 18 months after Prefar application. Has EPA approval as a tank mixture.
	Vegiben 2E (2E form only)	1.5-3 lb.	Broad spectrum of annual weeds	Immediately after seeding	This ester form of chloramben may leach less readily in sandy soils. Above 1.5 to 2 pounds per acre, injury chances increase under moist soil conditions. Some muskmelon cultivars may be susceptible to Vegiben injury.
As an alternative to herbicides where earliness is desired, black polyethylene mulch will control annual weeds, conserve moisture, and increase early spring soil temperatures.					

(See footnotes on page 6.)

SUGGESTIONS FOR 1981 ONLY

Crop	Treatment	Active ingredient per acre actually covered ¹	Weeds controlled	Timing of application (based on crop stage)	Remarks, cautions, limitations
Eggplant	Dacthal	6-10 lb.	Annuals ⁴ (primarily grasses)	After plants are established, 4-6 weeks after transplanting	Cultivate and weed prior to application. Can be applied to plants as part of a uniform soil application.
Greens	Dacthal	6-10 lb.	Annuals ⁴ (primarily grasses)	Immediately after seeding	For use on collards, kale, mustard greens, and turnips.
	Treflan	0.5-0.75 lb.	Annuals ³ (primarily grasses)	Preplant soil application, in- corporate with soil immediately	For use on collards, kale, mustard greens, and turnip greens.
	Furloe	1-2 lb.	Primarily broad- leaved annuals	Preemergence	For spinach only. Use lower rates in cool, wet weather.
Horseradish	Dacthal	6-10 lb.	Annuals ⁴ (primarily grasses)	Immediately after transplanting	Use for annual grass control and combine with TOK as an early postemergence treatment for broadleaved weeds.
	TOK ^{5*}	3-6 lb.	Broadleaved weeds ⁶	Before weeds are 1 inch high	Will not consistently control weeds over 1 inch tall. Some emerging annual grass may be controlled by this treatment. Lower rate will control seedling purslane.
TOK may not be available for the 1981 season because of possible label cancellation. Watch the University of Illinois vegetable and pest control newsletters (see page 1) for news concerning the status of TOK.					
Lettuce	Balan	1.5 lb.	Annuals	Preplant soil incorporation Incorporate with soil immediately	Is primarily a grasskiller. Seed after application to 3 weeks later. Do not plant wheat, barley, rye, grass, onions, oats, beets, or spinach for 12 months after application.
	Kerb*	1-2 lb.	Annuals	Preemergence or preplant- incorporated	Do not use when the air temperature exceeds 85° F. Use the lower rates listed on sandy soil. Do not use on peat or muck soils. See label for rotation crops. For best results, rainfall or irrigation is needed 1 to 2 days after application, especially during warm weather.
Onions	Preemergence Dacthal	6-10 lb.	Annuals ⁴ (primarily grasses)	Immediately after seeding or transplanting	May not kill smartweed or common ragweed. Can be used on seeds, sets, or seedlings. Use only on mineral soils. Use lower rates on sandy soils. A double application of Dacthal can be used at seeding, layby, or both. In most situations, the weed spectrum on mineral soils will respond well to a combination of Dacthal preemergence and TOK postemergence.
	Radox	4-6 lb.	Annuals ⁹ (primarily grasses)	Just before onions emerge	Use on muck soils. Heavy rainfall may reduce stand. Very effective on purslane and pigweed.
	Postemergence TOK*	3-4 lb.	Broadleaved weeds	When weeds are in the seedling stage and not over 1 inch high	Use a single application of E.C. or W.P. per growing season. Do not apply E.C. until onions are in the two- to three-leaf stage. Preemergence use of TOK with heavy rainfall may reduce stand. Use in combination with preplant or premergence material for annual grass control.
	Furloe	3-6 lb.	Broadleaved weeds (especially smartweed)	On seeded onions: loop stage or after 3- to 4-leaf stage	In the later sprays, direct at base of onion plant. If more than one application is applied do not exceed 6 pounds per acre for the season. Use lower rates in cool, wet weather. Use no later than 30 days before harvest.
TOK may not be available for the 1981 season because of possible label cancellation. Watch the University of Illinois vegetable and pest control newsletters (see page 1) for news concerning the status of TOK.					
Peas	Preemergence propachlor	4-4.9 lb.	Annuals	Preemergence	Do not use on sandy soil.
	Treflan	0.5-0.75 lb.	Annuals ²	Preplant soil incorporation, incorporate with soil immediately	Seed after application to 3 weeks later. Some reduction of growth and stand reduction possible under stress. May suppress some root rot.
	Cobex	0.3-0.5 lb.	Annuals	Preplant soil incorporation	
	Preemergence or Postemergence Premerge-3	0.3-9 lb.	Annuals (primarily broad- leaved weeds)	Preemergence or postemergence	Preemergence use 6 to 9 pounds; postemergence, use 0.3 pound to 1.1 pounds. Apply prior to bloom when peas are 2 to 8 inches tall. See label for further precautions. Preemergence use may help suppress root rot.
	Postemergence Basagran	0.75-1 lb.	Annual broad- leaf weeds, Canada thistle, nutsedge	When weeds are small and are actively growing; after peas have 3 pairs of leaves (or 4 nodes)	Can help control Canada thistle. Can provide good, broad-spectrum control when used with a grass-active herbicide. Do not mix with other pesticides. See Basagran entry under corn, postemergence for Canada thistle and nutgrass control.
	MCPB	1 lb.	Broadleaved weeds and Canada thistle	When peas are 3-7 inches tall and no later than 4 nodes prior to pea blossom	May delay maturity 1 to 4 days. Use at least 20 gallons of water per acre. Do not feed vines to livestock. MCPA is more effective on mustard. MCPB is less injurious to peas.
	MCPA	0.25-0.5 lb.			
	Perennial grass control, applications outside the growing season (see page 6)				
Potatoes, Irish	Eptam	3-6 lb.	Annual grasses and nutgrass ⁸	Drag-off treatment at emergence or preplant soil application Incorporate with soil immediately	Use lower rate on sandy soil.
	Treflan	0.5-1 lb.	Annuals ² (primarily grasses)	Drag-off treatment at emergence	Use a light incorporation.

(See footnotes on page 6.)

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SUGGESTIONS FOR 1981 ONLY

<i>Crop</i>	<i>Treatment</i>	<i>Active ingredient per acre actually covered¹</i>	<i>Weeds² controlled</i>	<i>Timing of application (based on crop stage)</i>	<i>Remarks, cautions, limitations</i>
Potatoes, Irish (cont.)	Lorox	0.75-2 lb.	Annuals	Apply prior to potato emergence	Plant tubers at least 2 inches deep. Do not replant treated area to other crops for 4 months after treatment. May injure crop on light, sandy soil. Do not apply over exposed tubers.
	chlorbromuron	2-3 lb.	Annuals	At very start of potato emergence	May injure crop on light, sandy soil. Do not harvest immature potatoes. Do not plant crops other than field corn, potatoes, or soybeans for 6 months after applying.
	dalapon	7 lb.	Quackgrass	Before plowing in spring; wait 4 days before plowing and planting	Not for fields intended for red-skinned varieties or White Rose. Do not plant potatoes for 4 weeks. Use surfactant as directed on label.
	metribuzin	0.25-0.5 lb.	Annuals (primarily broadleaved)	Postemergence, following a preemergence grass herbicide	Can be used preemergence also. Do not exceed 1 pound per acre in a season. Do not apply within 60 days of harvest. Do not use on red-skinned or early maturing white varieties. Do not apply in cool, wet weather.
	Lasso	2.5-3 lb.	Annuals	Apply at drag-off	Do not use on sandy soils. Can be used alone or in combination with Lorox or dinoseb.
Potatoes, sweet	Dacthal	6-10 lb.	Annuals ⁴ (primarily grasses)	Immediately after planting	Do not plant nonapproved crops on treated soil during the same season.
	Amiben	3 lb.	Annuals	Immediately after planting	
	Dymid, Enide	4-6 lb.	Annuals	Immediately after transplanting	
Squash Pumpkins	Amiben	3-4 lb.	Annuals	As soon after seeding as possible, or preplant-incorporated	Use on loam soils. Amiben can be applied broadcast or banded over the row in pumpkins.
Squash	Prefar	4-6 lb.	Annuals (primarily grasses)	Preplant soil application, incorporate with soil immediately	Is primarily a grasskiller. Consult label for sensitive crops within 18 months after application. Prefar can be used in rotation only with tomatoes, broccoli, cauliflower, lettuce, carrots, onions, and summer squash within 18 months of application. Use in combination with Alanap as suggested for cucumbers.
Tomatoes, direct-seeded and trans- planted	Dymid, Enide	4-6 lb.	Annuals	Preemergence	Do not plant other food crops on treated areas for 6 months. If used under dry soil conditions, a shallow (1 inch) incorporation as a preplant treatment may improve weed control. Can also be used on transplanted peppers.
		1-2 lb.	Annuals	Preplant soil incorporated	Can also be used on direct-seeded and transplanted peppers.
	Devrinol metribuzin	0.25-1 lb. (min.-max.)	Primarily broad- leaf. Should be used with a grass-active herbicide.	Preplant incorporated. Post-emergence, can be broadcast or directed.	Apply with ground equipment to seeded and transplanted tomatoes. Do not use air-blast or other high-pressure spray equipment. Do not use on peppers.
		0.25-0.5 lb.		Preplant incorporated, transplant tomatoes	Alone or in a tank-mix combination with Treflan.
		0.25-0.5 lb.		Broadcast spray, established tomatoes	Single or multiple applications. Minimum of 14 days between treatments. Direct-seeded plants should have 5 or 6 leaves; transplants should show new growth.
Tomatoes and Peppers, transplanted	Treflan	0.5-1 lb.	Annuals ⁴ (primarily grasses)	Directed spray, established tomatoes	Recommended for use in fields with severe weed problems, or for fields with hard-to-control weeds.
					Do not apply within 7 days of harvest. Do not apply within 3 days following periods of cool, wet, or cloudy weather; otherwise, crop injury may occur. Do not apply to established tomatoes within 24 hours after the application of other pesticides. Do not tank-mix with other pesticides, except Treflan. Do not apply more than 1 pound per acre per crop season, or more than 1 pound per acre within a 35-day period. Allow at least 14 days between applications, regardless of the dosage or method used. Do not use hot caps on tomatoes within 7 days before application, or at any time afterward.
Asparagus	Stale seedbed, before crop emergence				
	Paraquat*	0.5-1 lb.	All emerged green foliage	Before crop emergence; allow maximum weed emergence prior to treatment	Weeds that emerge after treatment will not be controlled. Crop plants that have emerged at application will be injured. Do not apply within 18 months of harvest.
Asparagus	Perennial weed control, applications during and outside the growing season				
	Roundup	2-5 lb.	(See remarks)	Before emergence, or with shielded or directed sprays during fern growth	Use to control milkweed, thistle, field bindweed, quackgrass, or Johnsongrass. Apply to quackgrass when it is 6-8 in. tall in the fall or spring. Apply to Johnsongrass when it is at least 12 in. tall and actively growing. Do not till for the specified time for each species (see label). Does not provide residual weed control. Do not mix, store, or apply Roundup spray solutions in containers or spray tanks made of galvanized or unlined steel (except stainless steel).

(See footnotes on page 6.)

SUGGESTIONS FOR 1981 ONLY

<i>Crop</i>	<i>Treatment</i>	<i>Active ingredient per acre actually covered^a</i>	<i>Weeds controlled</i>	<i>Timing of application (based on crop stage)</i>	<i>Remarks, cautions, limitations</i>
Perennial grass control, applications outside the growing season					
Beans, edible	Roundup	2-3 lb.	(See remarks)	(See remarks)	Use for quackgrass or Johnsongrass control. Apply to quackgrass when 6 to 8 inches tall in fall or spring. Apply to Johnsongrass when at least 12 inches tall and actively growing. Do not till until 3 to 7 days after application. Does not provide residual weed control. Do not mix, store, or apply Roundup spray solutions in galvanized steel or unlined steel containers (except stainless steel) or spray tanks.
Corn, sweet					
Corn, pop					
Peas					

* Restricted-use herbicides are identified with an asterisk(*).

¹ Based on active ingredients (actual amount of active herbicide in material or acid equivalent). Use lower rate on sandy soil and higher rate on clay and loam soils. When using a band application over the row, adjust amount of material applied to the part of an acre treated. See Illinois Circular 1047. ² May not control ragweed and panicum. ³ May not control smartweed. ⁴ May not control ragweed, smartweed, and velvetleaf. ⁵ Use of 50% wettable powder is suggested for cabbage and horseradish. ⁶ May not control ragweed or chickweed. Grass control is sometimes marginal. ⁷ May not control crabgrass. ⁸ Do not use Alanap Plus, Solo, Whistle, or Amoco Soybean herbicide. These materials all contain Alanap plus another ingredient that may cause injury. ⁹ May not control smartweed and velvetleaf.

Storing Pesticides and Containers

Keep pesticides and containers in a separate building, room, or enclosure used only for this purpose. Such buildings or rooms should be dry, ventilated, and locked. Fence outside storage areas to protect children and animals and to discourage pilferage. CAUTION: Do not store weedkillers, herbicides, or defoliants in the same room with insecticides. Chlorate salts can create a fire or explosion hazard. Remove only the pesticides needed for one day's operation and return empty containers — and any unused pesticide — to the storage area each day.

Disposing of Pesticides and Containers

Surplus Pesticides. To dispose of surplus pesticide mixtures, try to find other areas with the same pest problem and use up any extra tank mix or rinse water on these areas. Do not drain surplus pesticides in any location where they can contaminate wells, streams, rivers, lakes, or ponds.

Operators of landfills meeting environmental safety standards can obtain supplemental permits to handle toxic waste materials, including pesticides. To dispose of large quantities of surplus pesticides, contact the Illinois EPA Division of Land Pollution Control to locate the nearest landfill with a supplemental permit for toxic waste or to obtain specific instructions about disposal.

Pesticide Containers. All empty pesticide containers, regardless of their type, should be rinsed three times before disposal. Rinse water should be dumped in the tank. Triple-rinsed containers should be punctured or broken to facilitate drainage and to prevent reuse for any purpose. They should then be hauled to a sanitary landfill for disposal. Small quantities of containers may be buried singly in open fields, with due regard for the protection of surface and subsurface water.

Illinois regulations permit the burning of combustible containers provided that they are burned on the premises where they were used, that they are burned more than 1,000 feet from residential areas, that the burning will not cause undue visibility or environmental hazards, and that no reasonable alternate disposal method is available.

Do not breathe smoke from burning pesticide containers, and do not burn containers that have weedkillers such as 2,4-D or similar herbicides. When these change to a gas, the vapors may damage nearby crops and shrubbery. Pesticides containing chlorates may explode when heated and, therefore, should not be burned.

Other Publications on Weed Control

Copies of the following publications on weed control are available from the office of your county Extension adviser in agriculture or by writing to the Office of Agricultural Publications, 123 Mumford Hall, Urbana, Illinois 61801.

- Prevent 2,4-D Injury to Crops and Ornamental Plants — Circular 808
- Legal Aspects of Crop Spraying — Circular 990
- Calibrating and Adjusting Granular Row Applicators — Circular 1008
- Calibrating and Maintaining Spray Equipment — Circular 1038
- Controlling Weeds in the Home Garden — Circular 1051
- Turfgrass Pest Control — Circular 1076
- Herbicides for Commercial Fruit Crops in Illinois — H-659
- Herbicide Recommendations for Commercial Nurserymen — NC-2-80
- 1981 Field Crops Weed Control Guide

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